Vehicle Propulsion Technologies

Fully charged with innovation

National Research Council Canada
Conseil national de recherches Canada
Canada

Improving fuel efficiency is the automotive industry's most pressing challenge. Automakers and part manufacturers need to adopt new technologies to comply with strict government standards and increased consumer demand for more environmentally responsible vehicles. Automakers are addressing the challenge, in part, by increasing the efficiency and use of electric propulsion. The NRC's Vehicle Propulsion Technologies (VPT) program will help you develop the technologies you need to be a leader in the growing supply chains associated with vehicle electrification.

Advancing Vehicle Electrification

Are you designing battery modules, producing battery components, manufacturing cooling systems, developing next generation magnets for electric motors, optimizing electrode formulations or prototyping new fuel cell chemistries? The NRC can help you develop, optimize and test low-cost technologies aimed at improving electric vehicle performance, economics and safety. Not only can the NRC perform lab-scale research, testing and pre-certification, we have the facilities and expertise for full-scale prototyping as well as production scale-up.

Low-cost electric motors

The NRC addresses the challenge of higher cost associated with permanent magnet e-motors by focussing on:

- Material selection
- Manufacturing and assembling processes to reduce part counts
- Additive manufacturing technology allowing the 3D printing of permanent magnet into innovative new designs

Whether you are a raw material producer, materials processor, a components producer, or an e-motor designer, you can benefit from our globally recognized expertise in the development of magnetic materials and components.

- Soft magnetic material cores
- Hard magnetic material shaping
- Selection of adhesives and other insulating materials
- Prototyping of components

Manufacturing for fuel cell vehicles

The supply chain for manufacturing fuel cell vehicles is in its early stages, constantly growing and evolving, providing numerous opportunities for newcomers with fresh ideas. NRC technologies ensure reliable, safe and cost-effective volume manufacturing and commercialization of fuel cell systems for transportation applications:

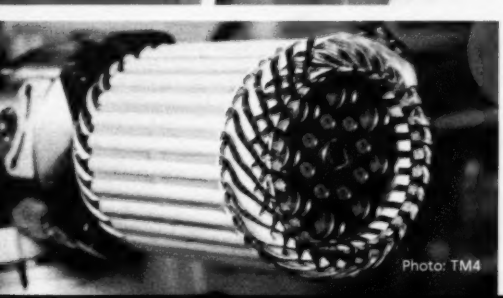
- Material assessment
- Manufacturing processes
- Characterization tools
- Costing models
- Suppliers development
- Use of big data analytics to improve fleet performance

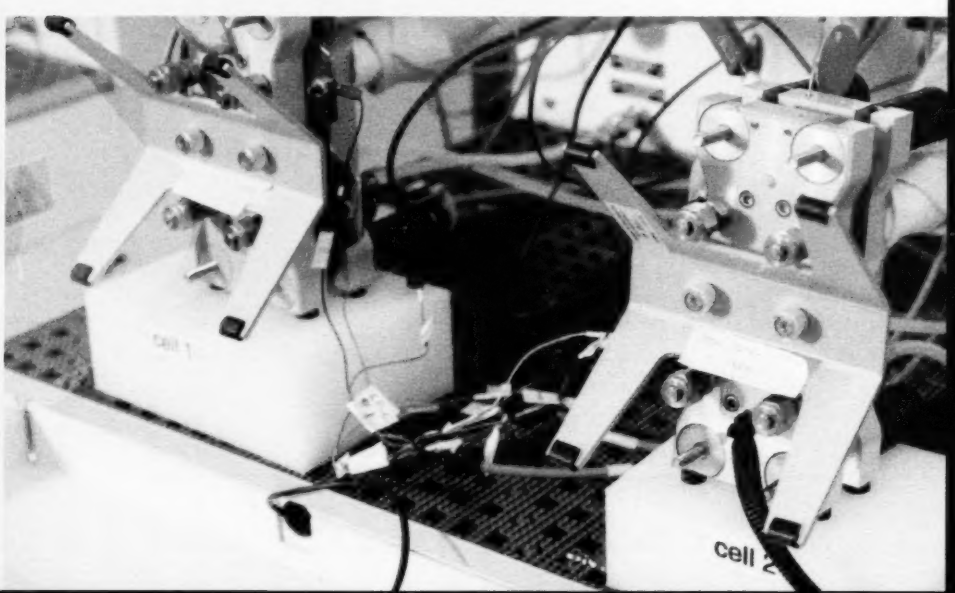
Safe and low-cost energy storage technologies

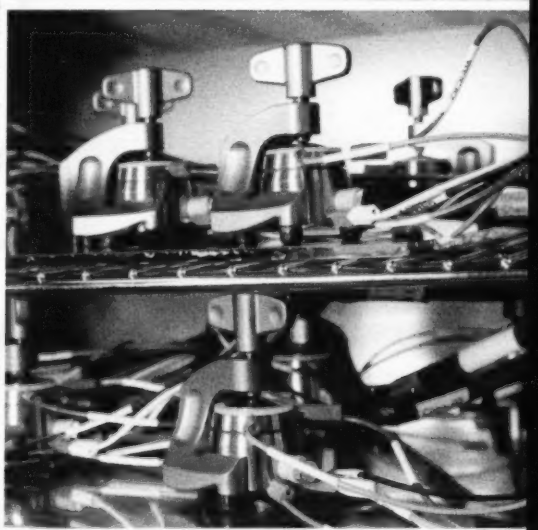
Lithium-based technologies are the current choice for the major manufacturers of electric and hybrid vehicles, but their cost, performance, durability and safety need to be improved. This creates an opportunity for companies to become a part of a growing supply chain.

- Anode and cathode formulations and material selection/qualification
- Liquid and solid polymer electrolytes
- High surface area current collectors
- Pouch cell prototyping
- Battery cell and module performance testing
- Battery failure detection and mitigation
- Cell-to-vehicle safety testing
- Cell-to-pack numerical simulation for thermal management
- Life cycle analysis (LCA)

In addition to our expertise and facilities, the NRC can assist you in selecting the right battery technology for the right duty cycle and ensure battery safety and performance.







Innovations to take you further

The NRC can serve as an integrated R&D extension to your organization, connect you with other companies across the supply chain and help you certify your products, enabling you to join this rapidly growing market. By working with NRC, you will:

- Accelerate your product and technology development and validation
- Become a leader in a rapidly growing supply chain
- Minimize your risks associated with the development, adoption and commercialization of new technologies
- Gain access to our cross-functional teams of experienced scientists and engineers as well as to our world-class facilities

Our world-class experts and specialized facilities help your business stand out. The NRC offers your company access to leading technology and provides low-risk solutions to develop innovative ideas, reduce start-up costs and shorten time to market.

Contact us today and find out how our experts can help you.

CONTACT

Eddy Zuppel
Program Leader
Tel.: 450-641-5059
Eddy.Zuppel@nrc-cnrc.gc.ca

David Fraser
Business Advisor
Tel.: 613-991-9972
David.Fraser@nrc-cnrc.gc.ca

www.nrc-cnrc.gc.ca

NR16-203/2018E-PDF
ISBN 978-0-660-25238-4 PDF
ISBN 978-0-660-25239-1 PAPER

April 2018
Également disponible en français